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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kunio Goto

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EXAMINER

STOUFFER, KELLY M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/829,292	Applicant(s) GOTO, KUNIO	
	Examiner KELLY STOUFFER	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6,7 and 27-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7 and 27-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 June 2008 has been entered.

Response to Arguments

Applicant's arguments filed 3 June 2008 have been fully considered but they are not persuasive. The applicant argues that due to the limitations in the current amendment claim 1 is now commensurate in scope with data (as cited in Tables 1-5) showing unexpected results for the applicants' two-step heating process. However, in Tables 1-5 the examples are much more specific than the language present in the claims. For example, on page 19 of the instant specification, only a specific size of pin surface and box surface of a threaded joint for steel pipes, with specific steel compositions as shown in Table 1, were used in the experiments to show unexpected results. The applicant has not shown that all sizes of pin surface and box surface with all compositions of steel, as the claim currently encompasses, produce the same unexpected results as is claimed. How is one of ordinary skill in the art to know, for

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example, that pin and a box of excessive size, even a few meters or larger as the claim currently encompasses, may even be heated uniformly to the claimed temperatures in order to completely dry the coating and form a solid as claimed? In the case of the different types of steel, one of ordinary skill in the art would not automatically assume that all types of steel are conducive to this particular type of coating, especially since only specific types of steel are cited in the example. Coating arts, as recognized by one of ordinary skill in the art, heavily depend upon the type, composition, and physical properties of the substrate, among other factors. Therefore, it would not be a given that a box and pin of any size or any type of steel would be recognized by one of ordinary skill in the art as being able to be coated in the same manner as that claimed and achieve the same results.

There are specific solvents used in the experiments on page 19, ethanol/toluene in a 50/50 composition for some resins, etc. that are not reflected in the claim, rather the claim encompasses the use of all solvents, where the applicant has shown unexpected results for only certain solvent and resin mixtures. Because the multistage heating in which the applicant is trying to show unexpected results for includes drying, and hence evaporation of the solvents, the temperature and duration of heating largely depend upon the type of solvent. Not all solvents will have the same heating temperature and duration as claimed as evidenced by the applicant using a specific solvent with a specific composition. It is submitted that one of ordinary skill in the art would recognize that even changing the composition of the ethanol/toluene to a 70/30 mixture instead of a 50/50 mixture will effect the vaporization point and hence the drying temperature. The

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applicant has not shown nor would one of ordinary skill in the art suppose that all solvents in all compositions as currently claimed could be dried by the two step drying process using only those temperatures and times.

It is also noted that in the results of Table 3, a preheated surface temperature is required, which may or may not affect the unexpected results, and which claim 1 does not require. The claim language encompasses having no preheating step which may not lead to the results given in Table 3. Further, unexpected results in Table 3 are shown for specific steel types, specific surface treatments, and heating temperatures/times and not a combination of broader Markush groups with temperature and heating time ranges. For example, unexpected results are shown for steel type A preheated to 60 degrees Celsius with polyamide and molybdenum disulfide and a first heating of 100 degrees for 30 minutes and a second heating of 260 degrees of 30 minutes according to Table 3. Unexpected results are not shown for even the same steel type or lubricating/epoxy mixture at the entire range of claimed temperatures. Unexpected results are not shown for all of the resin and lubricating powder mixtures the claim encompasses. It is noted by the examiner that these examples are for illustration purposes only, and to make the claim commensurate in scope with the data careful review of the data in the instant specification should occur. Though claim 27 does include a preheating step as amended, it does not cure the deficiencies of not being commensurate in scope with the present evidence as discussed above.

Therefore, for at least the above reasons, the rejections of the previous office action are maintained and new grounds of rejection are presented below necessitated by amendment.

Claim Objections

Claims 1 and 27 are objected to because of the following informalities: "the steps:" on line 4 of each claim should be --the steps of:--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-4, 6-7 and 27-31 are rejected under 35 U.S.C. 103(a) as obvious over Tsuru et al. (US 6,027,145), or in the alternative, Tsuru et al. in view of Takamori et al. (US 6,451,515).

Regarding claims 1 and 27, Tsuru et al. discloses a process for the surface treatment of a threaded joint for steel pipes comprising a pin and a box, each having a contact surface including a threaded portion and an unthreaded metal contact portion, comprising the steps of: roughening the surface of at least one of the pin and the box (Table 1 and column 23) applying a coating fluid containing the claimed resins (abstract) and a lubricating powder (a molybdenum disulfide or tungsten disulfide in col. 18, lines 60-63 and the abstract) in a solvent to the contact surface of at least one of the pin and the box, and drying and baking the applied coating at a temperature in the range of 180-270 C (col. 21, lines 1-19). As to claim 27, Tsuru et al. teaches a preheating step in col. 21, lines 20-26 and Examples 5, 7, 15, and 16, etc.

The Examiner notes that it is well known in the coating art to heat coated substrates in stages in order to obtain more uniform heating of the coated substrate and more even solvent removal from the coating with an expected loss of efficiency in processing time. It is the Examiner's position that it would have been obvious for one having ordinary skill in the art to have performed the heating and baking step in Tsuru et al.'s process by heating in two stages in order to improve heating and solvent removal efficiency. Tsuru teaches, "The heating temperature may be arbitrarily determined in

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accordance with the properties of organic resin binder contained in the solid lubricant.”

Tsuru et al. also teaches “the method or condition of heating and baking is not limited to the specific example.” Since multi-stage heating is a well known means for heating and curing coatings in the coating art that it would have been obvious for an engineer having ordinary skill in the art to have used multi-stage heating with the expectation of similar, successful results. In addition, one of ordinary skill in the art, when baking and curing (i.e. drying) organic coatings has two options, to either heat all at once as Tsuru et al. shows, or use a multi-stage heating process. Therefore, using a multi-stage heating process would have been obvious because “a person of ordinary skill has good reason to pursue the known options with his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” See *KSR International Co. v. Teleflex Inc.*, 550 U.S.--, 82 USPQ2d 1385 (2007). Further, as for the twenty minutes of heating, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the drying time at each temperature range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

Alternatively, Takamori et al. (US 6451515) teaches that when removing organic solvent in a film (such as the ketone solvent of Tsuru et al. in column 21 line 5) one of ordinary skill in the art would desire a two stage heating process including the same

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temperature ranges as the instant application to promote gradually removing the organic solvent (column 14 lines 44-57). One of ordinary skill in the art would recognize that in gradually removing the solvent, damage and galling to the film would be prevented, and that the time of heating at each stage depends upon the speed of removing the solvent. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the drying time at each temperature range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955). Further, this technique for improving a particular class of methods (i.e. solvent removal from a coating that would be useful in Tsuru et al. for preventing galling) was part of the ordinary capabilities of a person of ordinary skill in the art, in view of the teaching of the technique for improvement in other situations (as shown in Takamori et al.). See *KSR International Co. v. Teleflex Inc.*, 550 U.S.--, 82 USPQ2d 1385 (2007).

As to claims 3-4 and 28-29, Tsuru et al. is silent with regard to the hardness and adhesive strength of the solid lubricant coating formed. However it is noted that Tsuru et al. teaches that a lubricant coating has excellent hardness and toughness and the adhesive property of it to the manganese phosphate chemical formation layer is very high (col. 21, lines 46-67). It is the Examiner's position that the hardness and adhesive strength of the layer would be within the claimed range since the coating materials and process steps of Tsuru et al. are materially similar to that claimed by Applicant. Any

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differences in properties between the claimed invention and that of Tsuru et al. must have been caused by process variables not claimed in the instant application.

As to claims 6-7 and 30-31, Tsuru et al. teaches that a manganese phosphate chemical formation coating layer is formed on the threaded joint, forming a contact surface to which the coating fluid is applied. Tsuru et al. teaches that the manganese phosphate chemical formation layer is porous (col. 15, lines 61-67), and the surface roughness of the phosphate chemical formation layer is in the range of 3-30 μm R_M (col. 13, lines 37-38).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY STOUFFER whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
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kms

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